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Groundwater-Quality Data from the Eastern Snake River Plain Aquifer, Jerome and Gooding Counties, South-Central Idaho, 2017

Data Series 1085

U.S. Department of the Interior
U.S. Geological Survey

Cover:

Background: Domestic well in an alfalfa field in the Jerome/Gooding County groundwater-quality area, south-central Idaho.

Top: Well with a groundwater level tape in well and the tip of a survey rod used to survey location and elevation in the Jerome/Gooding County groundwater-quality area, south-central Idaho.

Middle: Water-quality sampling line held down with a tripod in a well in the Jerome/Gooding County groundwater-quality area, south-central Idaho.

Bottom: U.S. Geological Survey Hydrologist measuring the groundwater level of well in the Jerome/Gooding County groundwater-quality area, south-central Idaho.

All photographs by Kenneth D. Skinner, U.S. Geological Survey, June 2017.

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U.S. Geological Survey

U.S. Department of the Interior
RYAN K. ZINKE, Secretary

U.S. Geological Survey
William H. Werkheiser, Deputy Director
exercising the authority of the Director

U.S. Geological Survey, Reston, Virginia: 2018

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Contents

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Conversion Factors

U.S. customary units to International System of Units

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
	Flow rate	
gallon per minute (gal/min)	0.06309	liter per second (L/s)
	Transmissivity	
foot squared per day (ft^2/d)	0.09290	meter squared per day (m^2/d)

Temperature in degrees Celsius (°C) may be converted to degrees Fahrenheit (°F) as follows:

$$°F = (1.8 \times °C) + 32.$$

Datums

Vertical coordinate information is referenced to the North American Vertical Datum of 1988 (NAVD 88).

Horizontal coordinate information is referenced to the North American Datum of 1983 (NAD 83) [2011].

Altitude, as used in this report, refers to distance above the vertical datum.

Supplemental Information

Specific conductance is given in microsiemens per centimeter at 25 degrees Celsius (µS/cm at 25 °C).

Concentrations of chemical constituents in water are given in either milligrams per liter (mg/L) or micrograms per liter (µg/L).

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Abstract

Groundwater-quality samples and water-level data were collected from 36 wells in the Jerome/Gooding County area of the eastern Snake River Plain aquifer during June 2017. The wells included 30 wells sampled for the U.S. Geological Survey's National Water-Quality Assessment project, plus an additional 6 wells were selected to increase spatial distribution. The data provide water managers with the ability for an improved understanding of groundwater quality and flow directions in the area. Groundwater-quality samples were analyzed for nutrients, major ions, trace elements, and stable isotopes of water. Quality-assurance and quality-control measures consisted of multiple blank samples and a sequential replicate sample. All data are available online at the USGS National Water Information System.

Introduction

In 2017, the last scheduled groundwater-quality sampling of the Jerome/Gooding well network was conducted for the U.S. Geological Survey National Water-Quality Assessment project (USGS NAWQA). The USGS NAWQA project provides nationally consistent information on the quality of the Nation's streams and groundwater, changes in water quality over time, and natural features and human activities affecting the quality of surface water and groundwater. The sampling of 30 wells in the Jerome/Gooding County area supports these project goals at local, regional, and national scales. Data from this study will be used to study regional trends of groundwater quality and to characterize groundwater quality with respect to depth and hydrologic position in the aquifer (Rowe and others, 2013).

This study was done in cooperation with Idaho Department of Water Resources (IDWR) and Idaho Power Company, which share an interest in groundwater quality and quantity in the region. The sampling effort along with additional data to improve spatial distribution and groundwater-quality constituents will aid ongoing water management activities as well as monitoring of groundwater and spring discharge from the eastern Snake River Plain (ESRP) aquifer. The data may also be useful in establishing monitoring locations for various management activities.

Purpose and Scope

This report documents the results of groundwater-quality and water-level data for 30 NAWQA wells and 6 additional wells in June 2017. These data will assist with evaluating groundwater-level and water-quality trends. The six additional wells sampled in this study were selected to fill data gaps and expand the spatial resolution of the NAWQA well network (fig. 1, table 1). The sampling of these six wells complements NAWQA sampling of 30 wells in the area by using the same protocols and sampling laboratory schedules (table 2). Groundwater-quality samples were analyzed for nutrients, major ions, trace elements, and stable isotope samples were collected at all 36 wells (table 2).

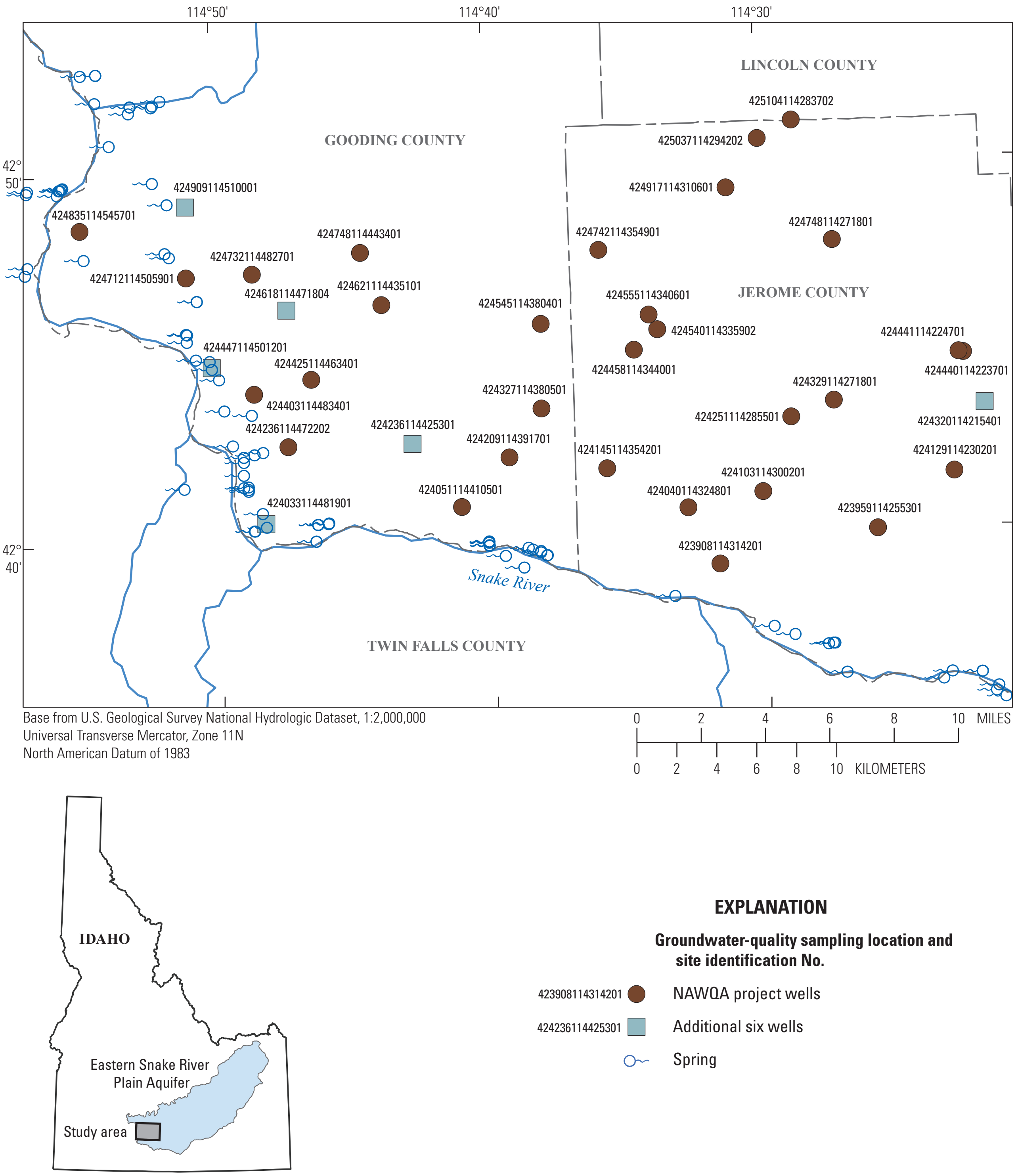


Figure 1. Groundwater-quality sampling locations and site identification numbers in Jerome and Gooding Counties, south-central Idaho.

Table 1. Groundwater-quality sampling wells, coordinates, and type in Jerome and Gooding Counties, south-central, Idaho.

[Groundwater-quality sampling locations and site identification Nos. are shown in figure 1. **Well type:** NAWQA, National Water-Quality Assessment]

Site identification No.	Well No.	Latitude	Longitude	Well type
424425114463401	08S 14E 11DDC1	42° 44 23.61366”	–114° 46 32.42784”	NAWQA well
424618114471804	07S 14E 35CCB4	42° 46 16.97880”	–114° 47 22.92460”	Additional well
424236114425301	08S 15E 29AAA1	42° 42 35.23095”	–114° 42 53.06684”	Additional well
424033114481901	09S 14E 03BDC1	42° 40 31.41688”	–114° 48 19.53288”	Additional well
424447114501201	08S 14E 08DBA1	42° 44 46.81477”	–114° 50 10.30076”	Additional well
424909114510001	07S 14E 17BCC1	42° 49 08.37282”	–114° 51 00.90057”	Additional well
424320114215401	08S 18E 21BBB1	42° 43 17.69863”	–114° 21 52.60742”	Additional well
424327114380501	08S 15E 24AAA1	42° 43 26.95682”	–114° 38 07.75688”	NAWQA well
424329114271801	08S 17E 15CDC1	42° 43 28.7”	–114° 27 24.0”	NAWQA well
425104114283702	06S 17E 31DDC2	42° 51 03.89177”	–114° 28 40.45736”	NAWQA well
425037114294202	07S 17E 05CCA1	42° 50 35.67083”	–114° 29 56.64534”	NAWQA well
424917114310601	07S 16E 13ADA1	42° 49 17.07071”	–114° 31 08.87595”	NAWQA well
424835114545701	07S 13E 22ABC1	42° 48 33.32353”	–114° 54 53.97830”	NAWQA well
424712114505901	07S 14E 30DAD1	42° 47 13.25499”	–114° 51 02.69304”	NAWQA well
424732114482701	07S 14E 27CBC1	42° 47 16.56119”	–114° 48 36.64282”	NAWQA well
424440114223701	08S18E 08BDD1	42° 44 40.07554”	–114° 22 36.60695”	NAWQA well
424441114224701	08S 18E 08BDC1	42° 44 41.35759”	–114° 22 46.77705”	NAWQA well
424742114354901	07S 16E 29ADA1	42° 47 41.49459”	–114° 35 52.73243”	NAWQA well
424540114335902	08S 16E 03DBD1	42° 45 30.19802”	–114° 33 47.84858”	NAWQA well
424458114344001	08S 16E 09ADA1	42° 44 58.22029”	–114° 34 40.95197”	NAWQA well
423908114314201	09S 16E 12CDD1	42° 39 07.32120”	–114° 31 44.28009”	NAWQA well
423959114255301	09S 17E 02DCC1	42° 39 58.45659”	–114° 25 55.52710”	NAWQA well
424621114435101	07S 15E 32CBC1	42° 46 21.64885”	–114° 43 54.03608”	NAWQA well
424555114340601	08S 16E 03BAD2	42° 45 54.37030”	–114° 34 05.90172”	NAWQA well
424103114300201	08S 17E 32CCB1	42° 41 02.93585”	–114° 30 05.08393”	NAWQA well
424236114472202	08S 14E 26BBB2	42° 42 35.18580”	–114° 47 26.24160”	NAWQA well
424209114391701	08S 15E 26DAAA1	42° 42 09.22979”	–114° 39 20.95155”	NAWQA well
424145114354201	08S 16E 28CCC1	42° 41 47.28015”	–114° 35 46.86733”	NAWQA well
424251114285501	08S 17E 20DAD1	42° 43 02.64350”	–114° 28 58.78470”	NAWQA well
424748114271801	07S 17E 22CDD1	42° 47 47.97407”	–114° 27 18.12668”	NAWQA well
424545114380401	08S 16E 06BCC1	42° 45 44.38975”	–114° 38 03.85866”	NAWQA well
424129114230201	08S 18E 32BBC1	42° 41 28.27877”	–114° 23 03.95976”	NAWQA well
424040114324801	09S 16E 02ABC1	42° 40 40.14835”	–114° 32 50.80511”	NAWQA well
424748114443401	07S 15E 30BAA1	42° 47 47.52906”	–114° 44 37.58241”	NAWQA well
424403114483401	08S 14E 15BCC1	42° 44 01.87131”	–114° 48 38.60380”	NAWQA well
424051114410501	09S 15E 03BAA1	42° 40 50.78486”	–114° 41 08.34039”	NAWQA well

Table 2. Groundwater-quality parameters sampled from 36 wells completed in the Eastern Snake River Plain aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.

[mg/L, milligram per liter; ‰, per mil; µg/L, microgram per liter; µS/cm at 25 °C, microsiemens per centimeter at 25 degrees Celsius]

Parameter name	Reporting level
Field parameters	
Alkalinity	1 mg/L
Dissolved oxygen	0.1 mg/L
pH	0.1
Specific conductance	1 µS/cm
Temperature	0.1 °C
Turbidity	0.1
Oxygen and deuterium isotope ratio, Reston Stable Isotope Laboratory Code 1172	
$^{2}H/^{1}H$ isotope ratio	0.1 ‰
$^{18}O/^{16}O$ isotope ratio	0.1 ‰
Groundwater nutrients, National Water Quality Laboratory Schedule 2755	
Nitrogen, ammonia	0.01 mg/L
Nitrogen, nitrite	0.001 mg/L
Nitrogen, nitrite + nitrate	0.04 mg/L
Phosphorus, phosphate, ortho	0.004 mg/L
Total nitrogen (NH_3+NO_2+NO_3+organic)	0.05 mg/L
Groundwater trace elements, National Water Quality Laboratory Schedule 2710	
Aluminum	3 µg/L
Antimony	0.03 µg/L
Arsenic	0.05 µg/L
Barium	0.1 µg/L
Beryllium	0.01 µg/L
Boron	5 µg/L
Cadmium	0.03 µg/L
Chromium	0.5 µg/L
Cobalt	0.03 µg/L
Groundwater trace elements, National Water Quality Laboratory Schedule 2710—Continued	
Copper	0.2 µg/L
Lead	0.02 µg/L
Lithium	0.15 µg/L
Manganese	0.4 µg/L
Molybdenum	0.05 µg/L
Nickel	0.2 µg/L
Selenium	0.05 µg/L
Silver	1 µg/L
Strontium	0.5 µg/L
Thallium	0.02 µg/L
Uranium, natural	0.01 µg/L
Vanadium	0.1 µg/L
Zinc	2 µg/L
Groundwater major inorganics, National Water Quality Laboratory Schedule 2750	
Bromide	0.01 mg/L
Calcium	0.022 mg/L
Chloride	0.02 mg/L
Fluoride	0.01 mg/L
Iron	5 µg/L
Magnesium	0.011 mg/L
Manganese	0.2 µg/L
Potassium	0.06 mg/L
Residue, 180 degrees Celsius (TDS)	20 mg/L
Silica	0.018 mg/L
Sodium	0.1 mg/L
Sulfate	0.02 mg/L

Description of Study Area

The study area is in Jerome and Gooding Counties, Idaho, which is within the western part of the ESRP (fig. 1). Land uses in the study area are primarily rangeland and agriculture. Most agricultural land in the study area is near the Snake River, a major source of water for irrigation. The climate is semiarid, and mean annual precipitation ranges from 8 to 12 in. (Skinner and Rupert, 2012).

The regional groundwater flow direction in the ESRP aquifer is to the southwest where groundwater discharges to the Snake River on the southwestern edge of the aquifer in an area called the Thousand Springs (fig. 1; Rupert and others, 2014). The study area overlies the western part of the ESRP aquifer, which is composed of a series of Quaternary vesicular and fractured olivine basalt flows of the Snake River Group (Whitehead, 1992). These basalt flows average from 20 to 25 ft in thickness with an estimated maximum total thickness of 5,500 ft (Rupert and others, 2014). The top of the basalt generally is less than 100 ft below land surface throughout this part of the plain. Layered basalt flows in the ESRP aquifer yield exceptionally large volumes of water to wells and springs. Individual well yields in the ESRP are some of the highest in the nation, typically ranging from 2,000 to 3,000 gal/min to as much as 7,000 gal/min with minimal drawdown (Whitehead, 1992; Lindholm, 1996). Transmissivity is commonly 100,000 ft^2/d, and can be as high as 1,000,000 ft^2/d (Whitehead, 1992). Locally, aquifer properties can vary greatly; however, the variability is minimal on a regional scale.

The NAWQA well network in the study area was established because of a history of elevated nitrate concentrations in groundwater and because the area land uses are predominantly irrigated agriculture sourced by surface water and an expanding dairy industry (Rupert, 1997). The well network includes 30 wells, mostly used for domestic supply. The wells range in depth from 55 to 600 ft (median of 222 ft). Most wells are cased from the surface, through the soil horizon, and a short distance into the basalts, typically 20–30 ft deep and then the wells are an open hole to the bottom of the well. Depth to water in these wells in 2017 was 47–455 ft with a median of 150 ft.

Methods

The same methods were followed at each well. Upon arrival at a well the groundwater level was measured following the procedures of Cunningham and Schalk (2011). Then the groundwater-quality sampling and well survey were completed as described here.

Groundwater-Quality Sampling

Groundwater-quality sampling followed the protocols in the USGS National Field Manual for the Collection of Water-Quality Data (U.S. Geological Survey, variously dated) including methods for determining adequate well purge prior to sampling, such as flushing at least three well bore volumes of water prior to sampling and monitoring field parameters until stabilized. Most sites sampled in this study are domestic wells pumped often for domestic use. In these domestic wells, field parameters (pH, water temperature, specific conductance, dissolved oxygen, and turbidity) were measured every 5 minutes until stable indicating an adequate well purge. The wells were purged for a minimum of 25 minutes prior to sampling. Four of the sampled wells were monitoring wells that are not used routinely, and therefore were pumped for a longer period to flush three bore volumes of water from the well and to attain field parameter stabilization. These wells did not have existing pumps in place, so a portable submersible pump was lowered into the well. Once the well purge was completed, water was transferred directly from the well faucet to a mobile laboratory through Teflon® tubing, and all samples were collected in an isolated processing chamber. When sampling was completed, samples were shipped overnight to the USGS National Water Quality Laboratory (NWQL) in Lakewood, Colorado, except samples for stable-isotope analysis. Stable-isotope samples were shipped to the USGS Reston Stable Isotope Laboratory (RSIL) in Reston, Virginia. A complete list of sampled constituents is shown in table 2.

Well-Elevation Surveys

Wells were surveyed to establish accurate locations and elevations. Global navigation satellite system surveys followed the methodology described in Rydlund and Densmore (2012) for using a real-time network. Wherever possible, wells were surveyed at the groundwater-level measuring point (MP). The MP is typically located inside the well at the top of the casing. At wells where the MP could not be surveyed due to satellite obstructions (for example, when the well was near a tree or building), the ground surface was surveyed as close to the well as possible. Ground-surface elevation is determined by subtracting the MP height (distance between the MP and the ground surface) from the surveyed elevation. When a MP could not be surveyed directly, the ground-surface elevation was reported directly from the surveyed elevation.

Quality Assurance and Quality Control

All samples were collected following quality-assurance and quality-control protocols described in the USGS National Field Manual for the Collection of Water-Quality Data (U.S. Geological Survey, variously dated). All samples, except those for stable-isotope analysis were analyzed by the USGS National Water Quality Laboratory (NWQL), which uses a Quality Management System (D.L. Stevenson, U.S. Geological Survey, unpub. data, 2013) and Quality Assurance and Quality Control Manual (D.L. Stevenson and A.R. Barnard, U.S. Geological Survey, unpub. data, 2013) as guidelines for the analytical work conducted at the laboratory. Stable-isotope samples were analyzed by RSIL following protocols described by Révész and Coplen (2008a, 2008b).

The bias and precision of groundwater-quality sample results were evaluated through the collection of an equipment blank, two field blanks, and a sequential replicate sample. An equipment blank was collected prior to sampling to verify the cleanliness of the equipment used for sampling. Two field blanks were collected at different dates throughout the sampling effort with the second field blank coinciding with the collection of a sequential replicate sample.

The equipment blank sample results were less than the NWQL reporting levels for all constituents except a copper concentration of 6.3 µg/L and a zinc concentration of 2.9 µg/L. The subsequent field blank indicated the copper concentration decreased to 0.43 µg/L and zinc was less than the NWQL reporting level. All other field blank values were less than the NWQL reporting level, as were all constituents measured for the second field blank.

The sequential replicate sample was collected on the same date as the second field blank. The constituents with the highest percent differences between the original field sample and the sequential replicate sample were zinc (21 percent), boron (15 percent), lithium (10 percent), strontium (8 percent), chromium (8 percent), total nitrogen (7 percent), arsenic (6 percent), and barium (5 percent). All other values were less than 5 percent difference between the original field sample and sequential replicate sample or the constituents were less than the laboratory reporting levels hence not comparable.

Results

All groundwater-quality and water-level results are available in appendix 1 and online at the USGS National Water Information System (NWIS) at https://waterdata.usgs.gov/nwis. NWIS includes a map interface to search for sites and data (https://maps.waterdata.usgs.gov/mapper/index.html). Groundwater-quality and level data can be viewed and downloaded by site(s) using site identification No.(s) (table 1) at https://nwis.waterdata.usgs.gov/usa/nwis/qwdata and https://nwis.waterdata.usgs.gov/usa/nwis/gwlevels, respectively.

Groundwater Levels

Groundwater altitude levels (fig. 2) indicate a groundwater-flow direction from the east to west (groundwater flows from high altitude to low altitude). Well-elevation surveys are helpful in reducing errors in groundwater levels. As a result, differences in groundwater-level altitudes are better attributed to actual measured differences instead of incorporated well-elevation errors. Groundwater levels might still contain some measurement errors, but are greatly reduced by having accurate well-elevation measurements.

Groundwater Quality

Groundwater-quality data are provided in appendix 1 and are available online at the NWIS at https://waterdata.usgs.gov/nwis as previously mentioned. Many of the groundwater-quality constituents measured for this study vary in concentration across the study area. The spatial distribution for most constituents is similar to specific conductance (fig. 3) and nitrate (fig. 4). Constituent concentrations are generally low in northwestern Jerome County through the central part of Gooding County (figs. 3 and 4). A previous study proposed that a thinning geometry of the aquifer in the study area forces an upward convergence of regional groundwater flow with local surface recharge to groundwater. In areas with less upward convergence of regional groundwater a relatively higher proportion of local recharge to groundwater from agricultural areas results in elevated concentrations of many constituents in the study area (Skinner and Rupert, 2012).

Stable Isotopes

Stable isotopes (deuterium [δ^2H] and oxygen [δ^{18}O] isotopes) provide useful information about the sources of constituents in water and(or) the evaporation conditions the source water has experienced (Kendall and McDonnell, 1998). Stable isotope results (figs. 5 and 6) show two groupings of samples results with two outliers. One outlier, shown in figures 5 and 6 (site identification No. 42471211450901), has notably high stable-isotope values and its sample was collected from a NAWQA well completed in sediments. Although this NAWQA well, being completed in sediments, differs from nearby NAWQA wells completed in basalts, it has remained in the well network to continue its long-term water-quality record. The stable isotope values of the other outlier (site identification No. 424618114471804), shown in figures 5 and 6, are less than the other samples. This outlier was sampled from a well that is 536 ft deep, which is much deeper than nearby wells and one of the deepest wells in the study (median well depth of 222 ft).

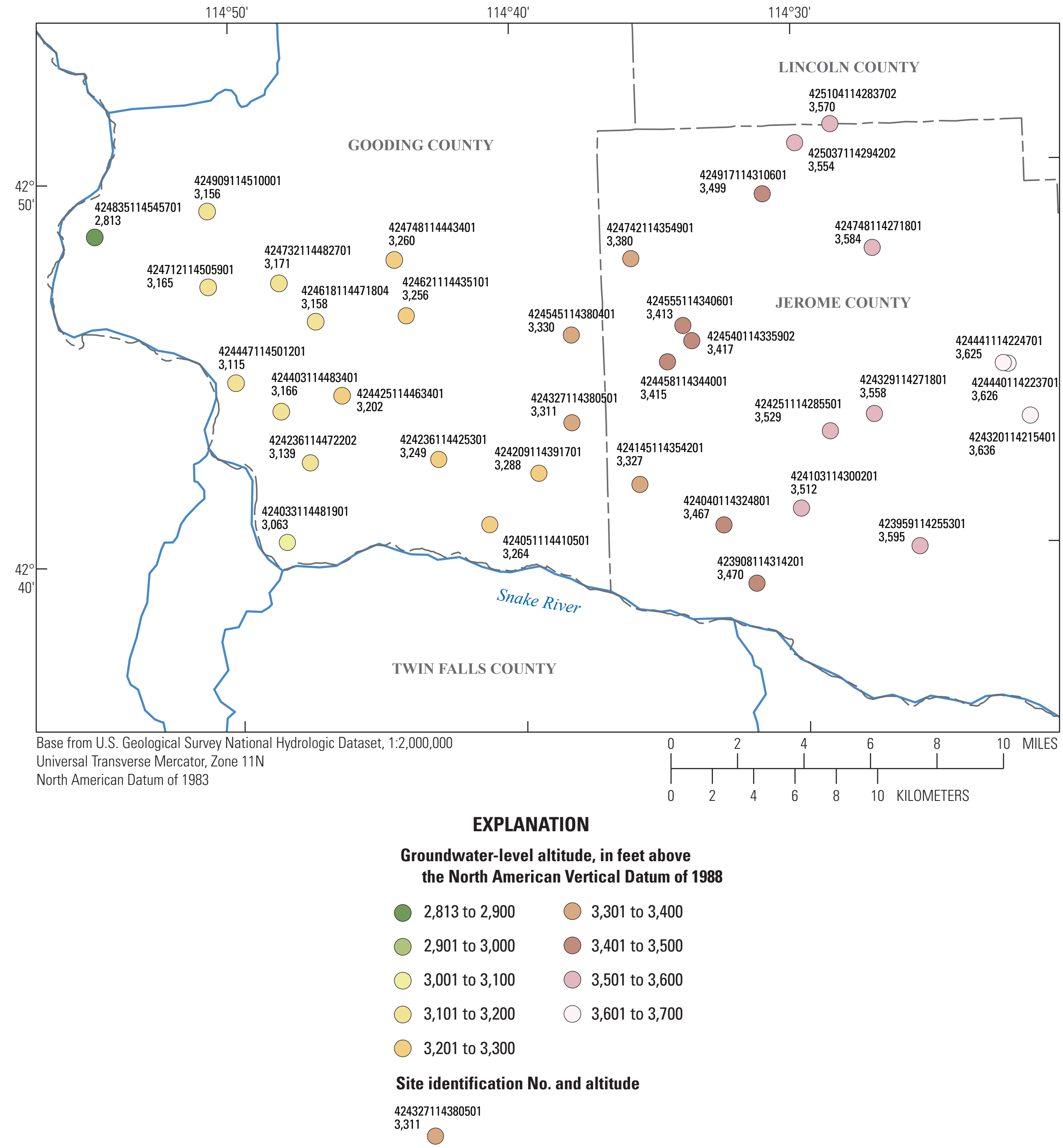


Figure 2. Measured groundwater-level altitudes at 36 wells, Jerome and Gooding Counties, south-central Idaho.

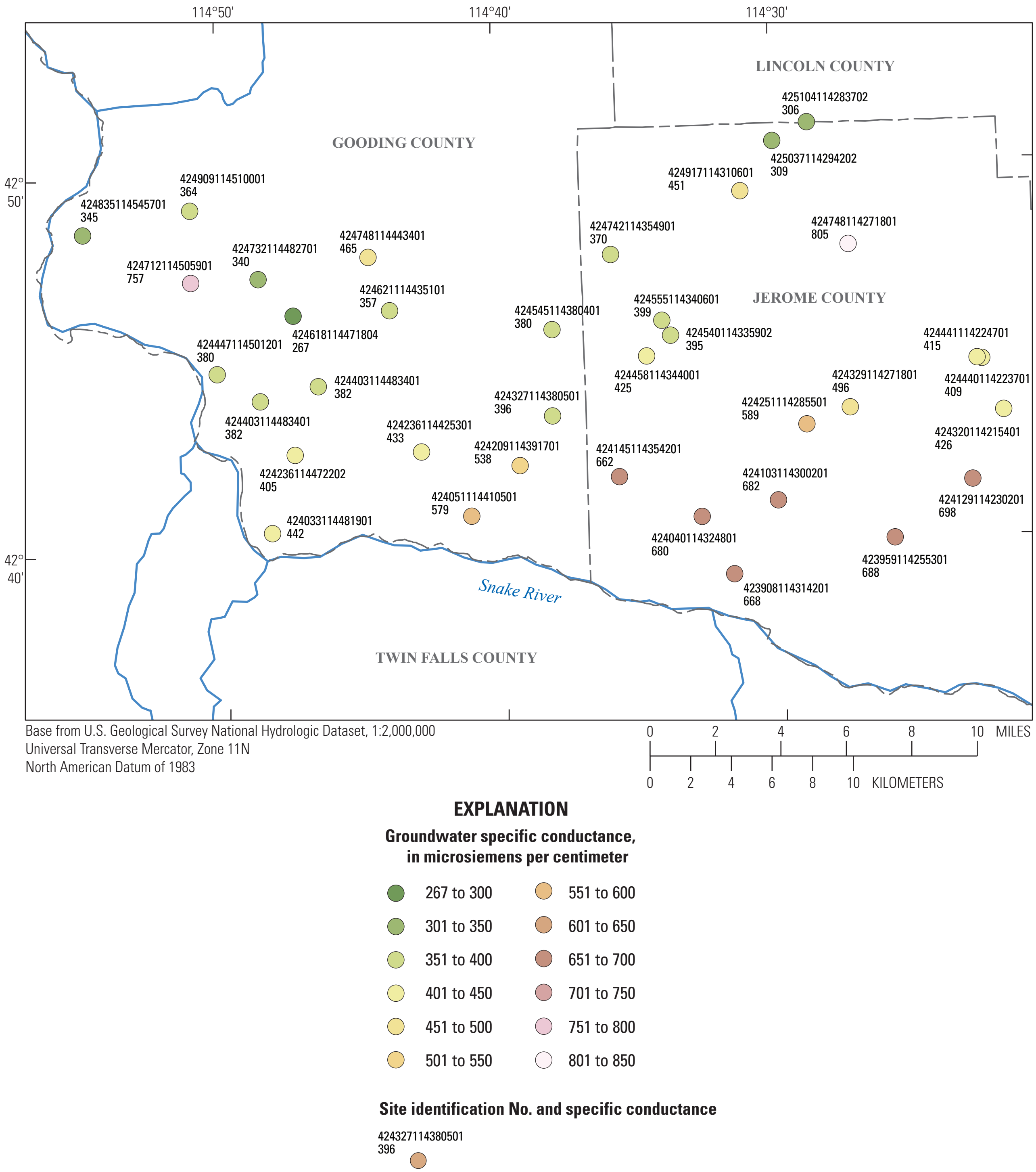
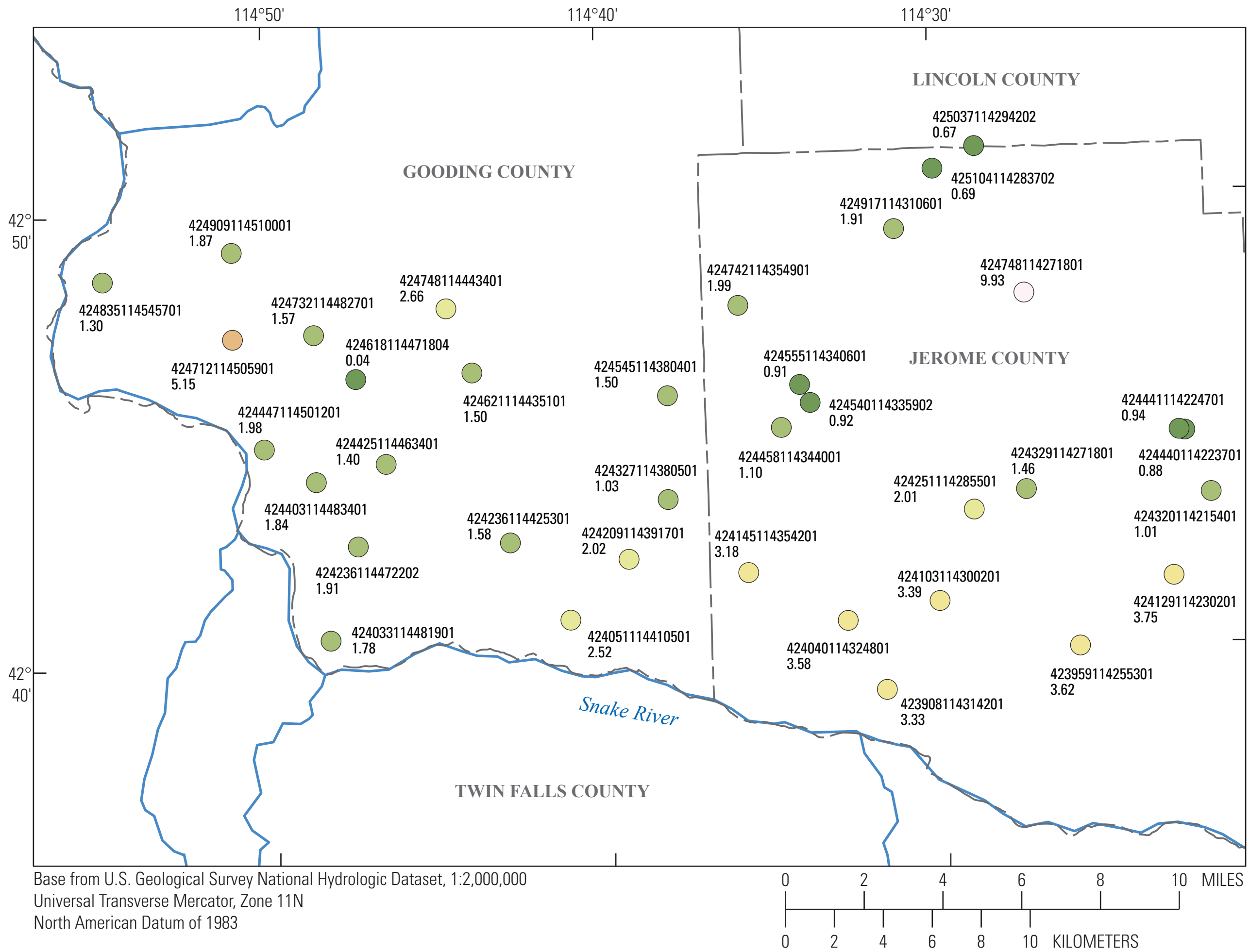


Figure 3. Specific conductance measured from groundwater in 36 wells in Jerome and Gooding Counties, south-central Idaho.



Base from U.S. Geological Survey National Hydrologic Dataset, 1:2,000,000
Universal Transverse Mercator, Zone 11N
North American Datum of 1983

EXPLANATION

Groundwater nitrate ($NO_2 + NO_3$ as N), in milligrams per liter

- 0.04 to 1.00
- 1.01 to 2.00
- 2.01 to 3.00
- 3.01 to 4.00
- 4.01 to 5.00
- 5.01 to 6.00
- 6.01 to 7.00
- 7.01 to 8.00
- 8.01 to 9.00
- 9.01 to 10.00

Site identification No. and nitrate concentration

424327114380501
1.03

Figure 4. Nitrate ($NO_2 + NO_3$ as N) from groundwater-quality samples in 36 wells in Jerome and Gooding Counties, south-central Idaho.

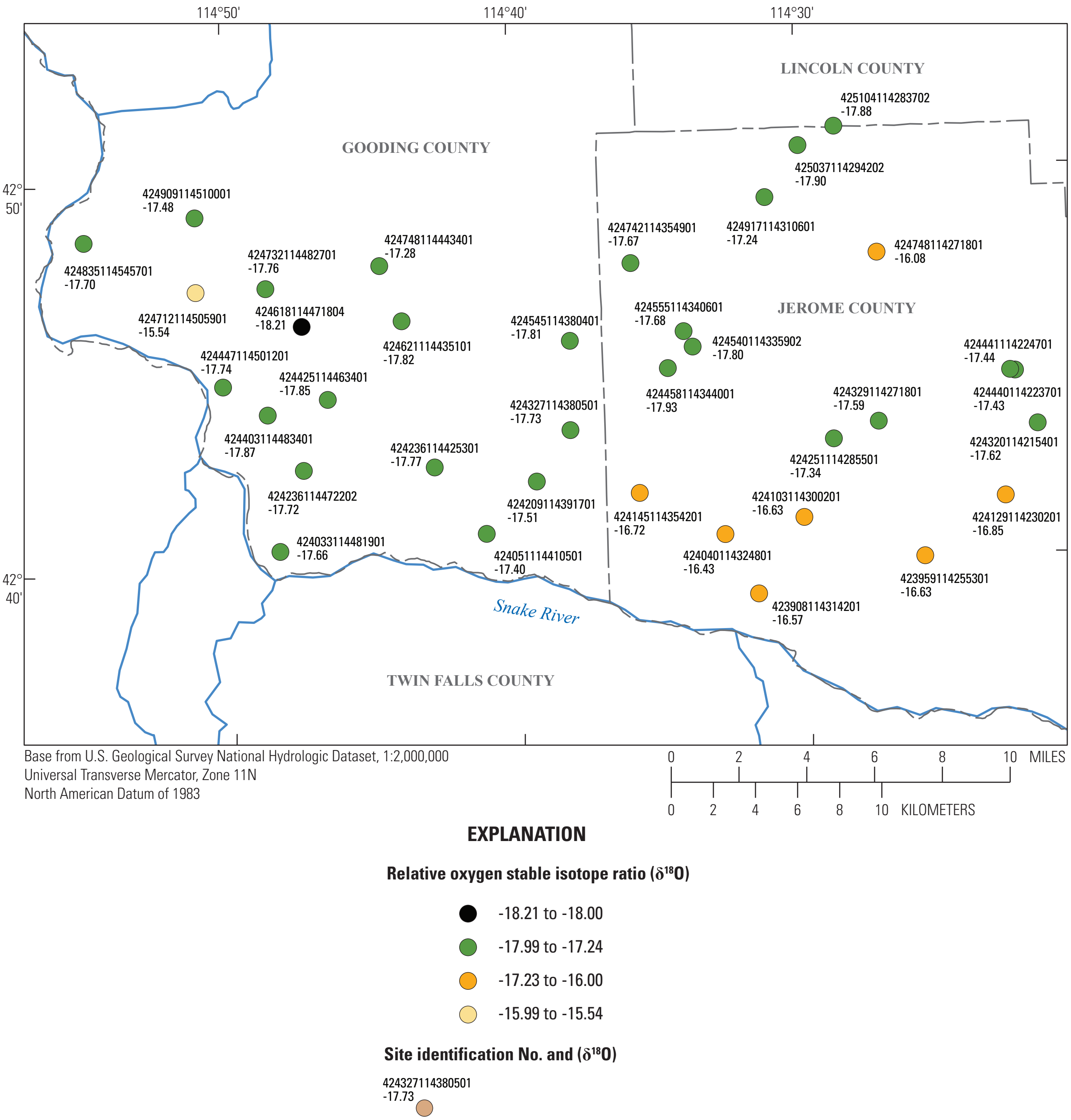


Figure 5. Relative oxygen stable isotope ratios ($\delta^{18}O$) from groundwater quality samples in 36 wells in Jerome and Gooding Counties, south-central Idaho.

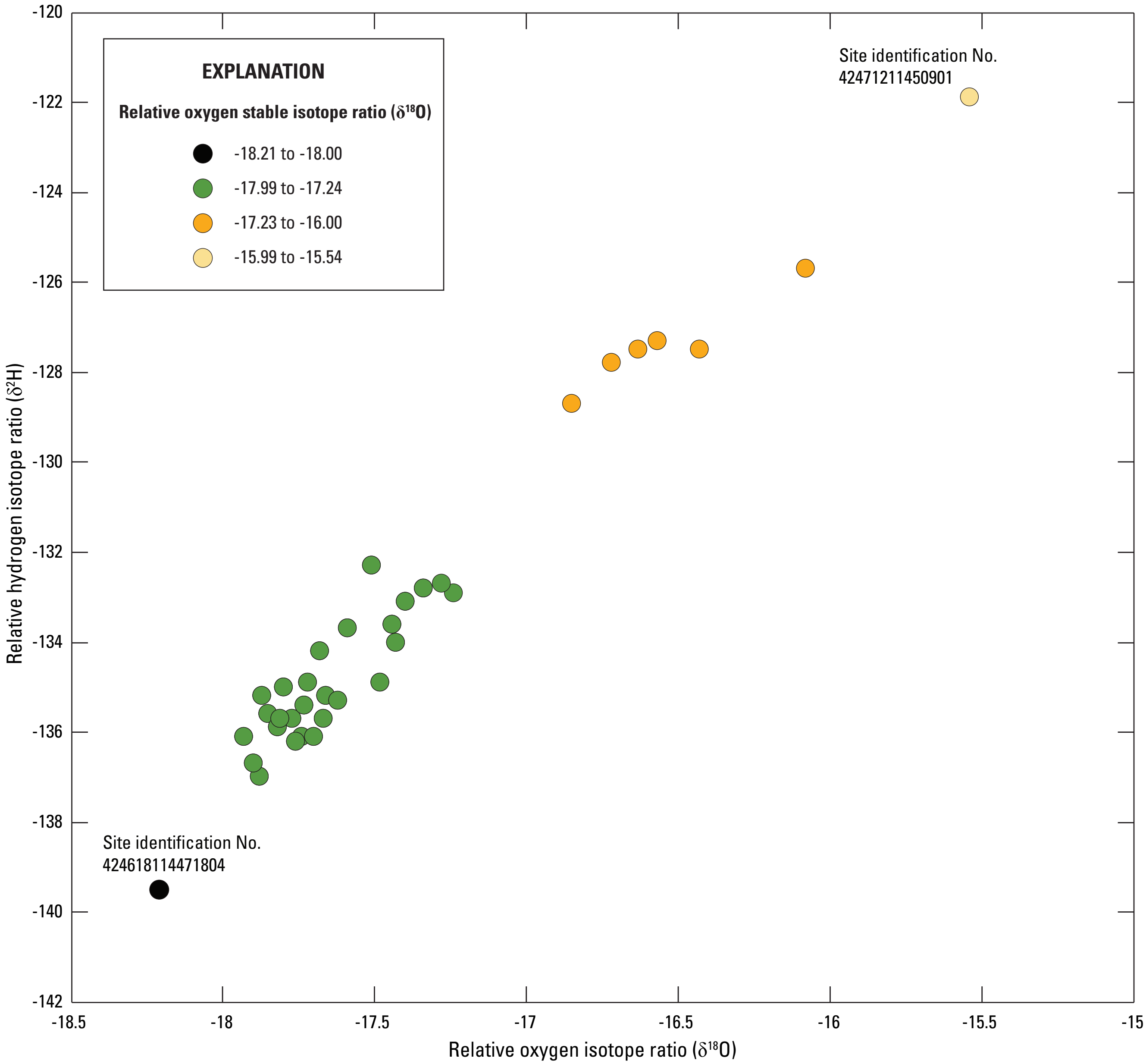


Figure 6. Stable isotope relative ratios of hydrogen and oxygen from groundwater quality samples in 36 wells in Jerome and Gooding Counties, south-central Idaho.

Acknowledgments

This study would not have been possible without the permission of well owners in Jerome and Gooding Counties to access and sample their wells. Their cooperation is greatly appreciated.

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Appendix 1. Groundwater-Quality Data from 36 Wells Completed in the Eastern Snake River Plain Aquifer, Jerome and Gooding Counties, South-Central Idaho, 2017

[All groundwater-quality data are available online at the USGS National Water Information System (https://waterdata.usgs.gov/nwis). Groundwater-quality sampling locations and site identification Nos. are shown in figure 1. Latitude and longitude are referenced to the 2011 adjustment of the North American Datum of 1983 (NAD83 [2011]). Land-surface elevation is referenced to the North American Vertical Datum of 1988 (NAVD88). **Abbreviations:** $CaCO_3$, calcium carbonate; °C, degrees Celsius; mg/L, milligram per liter; mm/Hg, millimeter of mercury; N, nitrogen; NTRU, Nephelometric Turbidity Ratio Unit; µS/cm, microsiemen per centimeter; µg/L, microgram per liter; ‰, per mil; <, less than]

Site identification No.	Well No.	Latitude (NAD83 [2011])	Longitude (NAD83 [2011])	Land-surface elevation (NAVD88)	Depth to groundwater below land surface	Date	Sample time
424425114463401	08S 14E 11DDC1	42° 44' 23.61366"	-114° 46' 32.42784"	3,275.42	75.26	6/13/2017	1000
424618114471804	07S 14E 35CCB4	42° 46' 16.97880"	-114° 47' 22.92460"	3,282.79	125.89	6/13/2017	1230
424236114425301	08S 15E 29AAA1	42° 42' 35.23095"	-114° 42' 53.06684"	3,323.87	75.52	6/13/2017	1400
424033114481901	09S 14E 03BDC1	42° 40' 31.41688"	-114° 48' 19.53288"	3,200.11	138.94	6/14/2017	1000
424447114501201	08S 14E 08DBA1	42° 44' 46.81477"	-114° 50' 10.30076"	3,185.64	71.53	6/14/2017	1400
424909114510001	07S 14E 17BCC1	42° 49' 08.37282"	-114° 51' 00.90057"	3,281.37	126.91	6/14/2017	1600
424320114215401	08S 18E 21BBB1	42° 43' 17.69863"	-114° 21' 52.60742"	3,912.55	278.88	6/15/2017	0900
424327114380501	08S 15E 24AAA1	42° 43' 26.95682"	-114° 38' 07.75688"	3,469.46	159.15	6/12/2017	1130
424329114271801	08S 17E 15CDC1	([1])	([1])	([1])	455.42	6/12/2017	1500
425104114283702	06S 17E 31DDC2	42° 51' 03.89177"	-114° 28' 40.45736"	4,023.30	454.54	6/15/2017	1100
425037114294202	07S 17E 05CCA1	42° 50' 35.67083"	-114° 29' 56.64534"	3,873.38	321.15	6/15/2017	1200
424917114310601	07S 16E 13ADA1	42° 49' 17.07071"	-114° 31' 08.87595"	3,811.41	314.05	6/15/2017	1400
424835114545701	07S 13E 22ABC1	42° 48' 33.32353"	-114° 54' 53.97830"	2,889.02	78.14	6/19/2017	1030
424712114505901	07S 14E 30DAD1	42° 47' 13.25499"	-114° 51' 02.69304"	3,246.16	81.92	6/19/2017	1330
424732114482701	07S 14E 27CBC1	42° 47' 16.56119"	-114° 48' 36.64282"	3,293.80	123.21	6/19/2017	1600
424440114223701	08S 18E 08BDD1	42° 44' 40.07554"	-114° 22' 36.60695"	3,989.71	364.88	6/20/2017	0900
424441114224701	08S 18E 08BDC1	42° 44' 41.35759"	-114° 22' 46.77705"	3,995.09	371.48	6/20/2017	1100
424742114354901	07S 16E 29ADA1	42° 47' 41.49459"	-114° 35' 52.73243"	3,604.45	226.27	6/21/2017	0930
424540114335902	08S 16E 03DBD1	42° 45' 30.19802"	-114° 33' 47.84858"	3,651.21	235.95	6/21/2017	1400
424458114344001	08S 16E 09ADA1	42° 44' 58.22029"	-114° 34' 40.95197"	3,600.18	187.43	6/21/2017	1600
423908114314201	09S 16E 12CDD1	42° 39' 07.32120"	-114° 31' 44.28009"	3,596.80	127.61	6/22/2017	1430
423959114255301	09S 17E 02DCC1	42° 39' 58.45659"	-114° 25' 55.52710"	3,743.88	149.64	6/22/2017	1600
424621114435101	07S 15E 32CBC1	42° 46' 21.64885"	-114° 43' 54.03608"	3,401.33	145.69	6/27/2017	1130
424555114340601	08S 16E 03BAD2	42° 45' 54.37030"	-114° 34' 05.90172"	3,627.81	214.94	6/27/2017	1400
424103114300201	08S 17E 32CCB1	42° 41' 02.93585"	-114° 30' 05.08393"	3,744.31	233.79	6/27/2017	1530
424236114472202	08S 14E 26BBB2	42° 42' 35.18580"	-114° 47' 26.24160"	3,197.19	57.82	6/28/2017	1100
424209114391701	08S 15E 26DAAA1	42° 42' 09.22979"	-114° 39' 20.95155"	3,423.08	135.11	6/28/2017	1630
424145114354201	08S 16E 28CCC1	42° 41' 47.28015"	-114° 35' 46.86733"	3,510.80	184.15	6/29/2017	0930
424251114285501	08S 17E 20DAD1	42° 43' 02.64350"	-114° 28' 58.78470"	3,903.83	375.97	6/20/2017	1400
424748114271801	07S 17E 22CDD1	42° 47' 47.97407"	-114° 27' 18.12668"	3,893.30	311.17	6/20/2017	1600
424545114380401	08S 16E 06BCC1	42° 45' 44.38975"	-114° 38' 03.85866"	3,480.51	151.35	6/21/2017	1200
424129114230201	08S 18E 32BBC1	42° 41' 28.27877"	-114° 23' 03.95976"	3,861.01	([2])	6/22/2017	0930
424040114324801	09S 16E 02ABC1	42° 40' 40.14835"	-114° 32' 50.80511"	3,604.19	137.47	6/22/2017	1200
424748114443401	07S 15E 30BAA1	42° 47' 47.52906"	-114° 44' 37.58241"	3,407.21	147.53	6/27/2017	0930
424403114483401	08S 14E 15BCC1	42° 44' 01.87131"	-114° 48' 38.60380"	3,212.47	46.88	6/28/2017	0930
424051114410501	09S 15E 03BAA1	42° 40' 50.78486"	-114° 41' 08.34039"	3,381.32	118.15	6/28/2017	1330

[1]Could not survey.

[2]Could not measure.

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Air pressure, mm/Hg	Dissolved oxygen, mg/L	pH	Specific conductance, µS/cm at 25 °C	Temperature, water, °C	Turbidity, NTRU	Dissolved solids dried at 180 °C, in mg/L
424425114463401	680	7.4	7.8	373	15.1	0.2	241
424618114471804	681	0.0	8.4	267	17.1	39.2	204
424236114425301	680	7.4	7.8	433	15.1	0.6	278
424033114481901	684	5.5	7.8	442	16.9	14.0	279
424447114501201	685	7.1	7.7	380	16.1	1.0	253
424909114510001	680	7.2	7.8	364	17.3	2.0	237
424320114215401	666	7.8	8.0	426	14.5	1.0	275
424327114380501	669	7.3	7.8	396	14.7	0.3	242
424329114271801	658	7.5	7.9	496	14.7	1.8	308
425104114283702	664	7.1	8.2	306	14.5	1.0	203
425037114294202	667	7.2	8.1	309	15.3	1.5	207
424917114310601	668	7.6	7.5	451	15.7	0.6	299
424835114545701	694	6.8	7.7	345	16.5	1.0	227
424712114505901	684	7.1	7.4	757	15.8	4.0	485
424732114482701	681	7.1	7.9	340	16.0	0.5	220
424440114223701	665	7.7	8.0	409	14.8	0.4	275
424441114224701	665	7.7	8.0	415	14.5	0.4	268
424742114354901	674	7.6	7.8	370	16.8	0.3	231
424540114335902	672	7.6	7.9	395	15.9	2.5	255
424458114344001	673	7.7	7.9	425	15.8	0.4	274
423908114314201	675	7.5	7.6	668	15.7	0.3	432
423959114255301	672	7.3	7.7	688	15.5	0.4	459
424621114435101	676	7.4	7.9	357	16.1	0.3	226
424555114340601	671	7.8	7.9	399	15.3	0.4	250
424103114300201	668	7.4	7.6	682	16.2	0.3	432
424236114472202	681	7.2	7.6	405	15.2	0.6	250
424209114391701	674	7.8	7.8	538	15.8	0.3	319
424145114354201	677	6.2	7.5	662	16.2	0.8	412
424251114285501	666	7.6	7.8	589	16.0	0.6	391
424748114271801	664	7.7	7.4	805	14.7	0.6	513
424545114380401	677	7.7	7.7	380	15.0	0.3	246
424129114230201	671	7.8	7.7	698	14.8	0.4	453
424040114324801	677	7.6	7.5	680	15.8	0.4	438
424748114443401	678	7.4	7.5	465	16.8	0.5	283
424403114483401	680	7.6	7.8	382	15.7	0.4	245
424051114410501	676	7.8	7.7	579	15.1	0.3	362

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Calcium, mg/L (water filtered)	Magnesium, mg/L (water filtered)	Potassium, mg/L (water filtered)	Sodium, mg/L (water filtered)	Alkalinity, mg/L $CaCO_3$ (water filtered)	Bicarbonate, mg/L (water filtered)	Bromide, mg/L (water filtered)
424425114463401	34.02	16.19	3.45	18.6	132	160	0.03
424618114471804	23.79	4.60	7.59	21.3	100	120	0.02
424236114425301	40.16	17.32	3.72	21.8	142	172	0.06
424033114481901	36.56	18.50	3.93	23.5	143	173	0.06
424447114501201	33.14	16.82	3.55	18.0	135	164	0.03
424909114510001	31.85	16.52	3.58	17.8	130	157	0.03
424320114215401	40.05	15.89	3.68	21.5	135	163	0.05
424327114380501	36.83	16.56	3.61	19.7	125	152	0.04
424329114271801	46.94	18.44	4.21	25.6	146	176	0.09
425104114283702	28.01	14.65	3.30	14.9	119	143	0.02
425037114294202	26.72	14.32	3.28	15.1	125	150	0.02
424917114310601	39.98	19.85	3.89	22.9	170	207	0.04
424835114545701	30.87	15.61	3.48	16.2	134	162	0.02
424712114505901	79.10	33.54	4.53	30.8	279	338	0.04
424732114482701	29.76	14.95	3.40	16.3	116	140	0.02
424440114223701	38.56	15.98	3.69	20.9	126	152	0.04
424441114224701	39.07	16.24	3.71	20.9	140	169	0.04
424742114354901	32.16	16.33	3.42	17.7	128	155	0.03
424540114335902	35.90	15.86	3.46	19.2	134	162	0.04
424458114344001	38.77	16.46	3.64	20.5	136	164	0.06
423908114314201	64.32	24.50	6.11	36.7	194	235	0.11
423959114255301	64.01	24.27	6.14	39.9	197	239	0.12
424621114435101	31.26	15.92	3.47	17.3	131	158	0.03
424555114340601	36.82	16.28	3.57	20.0	135	163	0.04
424103114300201	62.82	25.85	5.73	36.7	201	244	0.11
424236114472202	37.14	17.76	3.71	20.1	138	168	0.04
424209114391701	50.62	20.33	4.43	28.0	156	189	0.09
424145114354201	62.13	24.46	5.55	35.6	196	238	0.11
424251114285501	55.15	21.38	4.84	31.9	159	192	0.11
424748114271801	78.17	34.63	5.20	40.3	253	308	0.07
424545114380401	33.52	16.47	3.37	18.4	136	165	0.03
424129114230201	66.70	25.32	5.52	41.5	201	244	0.12
424040114324801	64.29	25.31	5.51	37.3	211	256	0.11
424748114443401	45.62	19.77	4.05	19.5	171	208	0.02
424403114483401	34.56	16.81	3.54	19.0	146	176	0.03
424051114410501	54.58	21.96	4.70	31.1	166	201	0.10

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Carbonate, mg/L (water filtered)	Chloride, mg/L (water filtered)	Fluoride, mg/L (water filtered)	Silica, mg/L (water filtered)	Sulfate, mg/L (water filtered)	Ammonia, mg/L as N (water filtered)	Nitrate plus nitrate, NO_3+NO_2, mg/L as N (water filtered)
424425114463401	0.7	16.48	0.54	34.3	32.41	<0.01	1.40
424618114471804	1.0	6.30	0.61	48.3	25.62	0.13	<0.04
424236114425301	0.6	25.13	0.56	34.1	39.98	<0.01	1.58
424033114481901	0.6	28.26	0.56	27.2	43.01	0.41	1.78
424447114501201	0.5	15.09	0.46	34.4	30.62	<0.01	1.98
424909114510001	0.6	11.97	0.41	33.9	27.63	<0.01	1.87
424320114215401	0.5	26.09	0.61	33.1	39.24	<0.01	1.01
424327114380501	0.4	20.80	0.59	34.7	35.37	<0.01	1.03
424329114271801	0.8	37.02	0.55	34.7	48.53	<0.01	1.46
425104114283702	0.6	9.45	0.40	33.8	22.71	<0.01	0.69
425037114294202	0.9	9.13	0.43	33.7	22.91	<0.01	0.67
424917114310601	0.4	16.66	0.44	34.0	37.35	<0.01	1.91
424835114545701	0.4	10.84	0.43	33.8	24.91	<0.01	1.30
424712114505901	0.6	33.59	0.68	41.5	62.29	<0.01	5.15
424732114482701	0.3	10.40	0.41	33.2	25.04	<0.01	1.57
424440114223701	0.9	21.69	0.58	32.7	37.69	<0.01	0.88
424441114224701	0.5	22.34	0.58	32.6	38.45	<0.01	0.94
424742114354901	0.6	13.94	0.44	33.2	29.90	<0.01	1.99
424540114335902	0.6	20.92	0.60	33.3	35.60	<0.01	0.92
424458114344001	0.7	26.53	0.60	33.6	39.54	<0.01	1.10
423908114314201	0.6	47.37	0.45	39.8	65.17	<0.01	3.33
423959114255301	0.7	50.45	0.39	38.2	68.91	<0.01	3.62
424621114435101	0.8	13.18	0.46	34.2	28.50	<0.01	1.50
424555114340601	0.8	19.93	0.60	33.8	36.14	<0.01	0.91
424103114300201	0.8	48.10	0.46	39.5	68.19	<0.01	3.39
424236114472202	0.4	19.59	0.58	34.4	35.96	<0.01	1.91
424209114391701	0.8	40.93	0.55	34.8	53.70	<0.01	2.02
424145114354201	0.5	48.27	0.48	37.5	65.13	<0.01	3.18
424251114285501	0.9	46.90	0.49	34.8	60.13	<0.01	2.01
424748114271801	0.5	40.37	0.37	38.0	64.77	<0.01	9.93
424545114380401	0.5	16.48	0.57	33.4	33.52	<0.01	1.50
424129114230201	0.7	50.97	0.44	35.7	71.51	<0.01	3.75
424040114324801	0.6	46.18	0.47	43.1	63.76	<0.01	3.58
424748114443401	0.4	16.64	0.43	33.4	33.89	<0.01	2.66
424403114483401	0.7	17.06	0.57	34.4	33.88	<0.01	1.84
424051114410501	0.8	45.79	0.53	35.2	59.20	<0.01	2.52

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Nitrite, mg/L as N (water filtered)	Orthophosphate, mg/L as P (water filtered)	Total nitrogen, mg/L (water filtered)	Aluminum, µg/L (water filtered)	Barium, µg/L (water filtered)	Beryllium, µg/L (water filtered)	Cadmium, µg/L (water filtered)
424425114463401	0.001	0.020	1.55	3	20.1	<0.01	<0.03
424618114471804	<0.001	0.014	0.20	<3	17.5	<0.01	<0.03
424236114425301	<0.001	0.020	1.71	<3	25.6	<0.01	<0.03
424033114481901	0.002	0.021	2.29	<3	28.5	<0.01	<0.03
424447114501201	<0.001	0.023	2.12	3	20.9	<0.01	<0.03
424909114510001	<0.001	0.021	1.94	4	20.6	<0.01	<0.03
424320114215401	<0.001	0.017	1.08	<3	25.1	<0.01	<0.03
424327114380501	<0.001	0.019	1.08	3	21.6	<0.01	<0.03
424329114271801	<0.001	0.016	1.52	<9	34.8	<0.03	<0.03
425104114283702	<0.001	0.018	0.72	3	15.6	<0.01	<0.03
425037114294202	<0.001	0.017	0.73	4	15.2	<0.01	<0.03
424917114310601	<0.001	0.030	2.04	<3	24.6	<0.01	<0.03
424835114545701	<0.001	0.022	1.40	<9	18.1	<0.01	<0.03
424712114505901	<0.001	0.022	5.49	<3	76.0	<0.01	<0.03
424732114482701	<0.001	0.017	1.61	<9	18.3	<0.01	<0.03
424440114223701	<0.001	0.016	0.98	<9	22.3	<0.01	<0.03
424441114224701	<0.001	0.016	1.02	<3	23.2	<0.01	0.28
424742114354901	<0.001	0.023	2.09	<3	19.4	<0.01	<0.03
424540114335902	<0.001	0.018	1.00	<3	22.0	<0.01	<0.03
424458114344001	<0.001	0.016	1.14	<3	26.3	<0.01	<0.03
423908114314201	<0.001	0.031	3.49	<3	74.0	<0.01	<0.03
423959114255301	<0.001	0.025	3.61	<3	73.8	<0.01	<0.03
424621114435101	<0.001	0.018	1.58	3	17.6	<0.01	<0.03
424555114340601	<0.001	0.021	1.01	<3	21.2	<0.01	<0.03
424103114300201	<0.001	0.024	3.58	<3	66.7	<0.01	<0.03
424236114472202	<0.001	0.024	1.97	<3	22.3	<0.01	<0.03
424209114391701	<0.001	0.018	2.15	<3	39.0	<0.01	<0.03
424145114354201	0.001	0.027	3.16	<3	65.3	<0.01	0.03
424251114285501	<0.001	0.020	2.08	<3	48.2	<0.01	<0.03
424748114271801	<0.001	0.081	9.93	<3	95.6	<0.01	<0.03
424545114380401	<0.001	0.020	1.67	<3	19.7	<0.01	<0.03
424129114230201	<0.001	0.030	3.80	<3	61.8	<0.01	0.04
424040114324801	<0.001	0.039	3.85	<3	80.3	<0.01	<0.03
424748114443401	<0.001	0.029	2.78	<3	31.2	<0.01	<0.03
424403114483401	<0.001	0.020	1.92	<3	19.9	<0.01	<0.03
424051114410501	<0.001	0.022	2.67	<3	44.9	<0.01	<0.03

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Chromium, µg/L (water filtered)	Cobalt, µg/L (water filtered)	Copper, µg/L (water filtered)	Iron, µg/L (water filtered)	Lead, µg/L (water filtered)	Lithium, µg/L (water filtered)
424425114463401	3.2	<0.03	0.4	<10	<0.02	22.5
424618114471804	<0.5	<0.03	<0.2	67	<0.02	36.3
424236114425301	2.5	<0.03	0.9	<10	0.05	27.5
424033114481901	1.6	0.03	0.6	21	<0.02	31.8
424447114501201	3.7	<0.03	0.8	<10	<0.02	18.2
424909114510001	4.0	0.04	1.2	<10	<0.02	14.2
424320114215401	2.2	<0.03	0.4	<10	0.03	29.7
424327114380501	2.7	<0.03	0.4	<10	<0.02	27.2
424329114271801	2.2	<0.03	1.6	<10	0.03	33.1
425104114283702	3.7	<0.03	<0.2	<10	0.57	11.9
425037114294202	3.7	<0.03	0.3	10	0.20	13.2
424917114310601	2.8	<0.03	1.1	<10	1.26	17.5
424835114545701	3.3	<0.03	1.0	<10	0.19	17.1
424712114505901	<0.5	0.04	1.3	32	0.06	45.5
424732114482701	3.6	<0.03	0.4	<10	0.18	13.9
424440114223701	1.9	<0.03	0.5	<10	0.05	23.8
424441114224701	2.0	<0.03	1.0	<10	0.30	24.1
424742114354901	3.5	<0.03	0.7	<10	0.08	13.1
424540114335902	2.6	<0.03	1.4	11	0.08	22.3
424458114344001	2.6	<0.03	0.3	<10	0.10	25.6
423908114314201	1.2	<0.03	0.7	<10	0.02	37.0
423959114255301	1.4	<0.03	2.1	<10	0.16	36.8
424621114435101	3.6	<0.03	0.4	<10	0.35	16.6
424555114340601	2.7	<0.03	0.6	<10	0.07	25.0
424103114300201	1.3	0.03	0.7	<10	0.07	38.9
424236114472202	3.0	<0.03	1.1	<10	0.03	24.0
424209114391701	2.0	<0.03	1.9	<10	0.03	34.4
424145114354201	1.1	0.04	1.0	22	0.26	40.3
424251114285501	2.1	<0.03	0.7	<10	0.12	37.0
424748114271801	0.7	0.06	1.9	<10	0.16	20.6
424545114380401	3.0	<0.03	0.6	<10	<0.02	19.7
424129114230201	1.6	0.03	1.0	<10	0.53	39.7
424040114324801	1.2	0.03	0.5	<10	0.03	31.6
424748114443401	2.5	<0.03	1.0	<10	0.09	18.8
424403114483401	3.3	<0.03	0.6	<10	0.06	22.6
424051114410501	1.9	<0.03	0.7	<10	0.06	36.7

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Manganese, µg/L (water filtered)	Molybdenum, µg/L (water filtered)	Nickel, µg/L (water filtered)	Silver, µg/L (water filtered)	Strontium, µg/L (water filtered)	Thallium, µg/L (water filtered)	Vanadium, µg/L (water filtered)	Zinc, µg/L (water filtered)
424425114463401	<0.4	2.55	0.3	<1	201	<0.02	8.2	3
424618114471804	31.7	4.71	<0.2	<1	184	<0.02	<0.1	<2
424236114425301	<0.4	2.28	<0.2	<1	233	<0.02	8.0	8
424033114481901	17.5	2.60	0.6	<1	184	<0.02	5.6	<2
424447114501201	<0.4	2.69	0.4	<1	176	<0.02	8.8	<2
424909114510001	<0.4	2.69	0.6	<1	176	<0.02	8.2	<2
424320114215401	<0.4	2.24	<0.2	<1	196	<0.02	7.2	13
424327114380501	<0.4	2.27	<0.2	<1	196	<0.02	7.9	16
424329114271801	<1.2	2.13	<0.2	<1	256	<0.02	6.7	14
425104114283702	<0.4	2.76	<0.2	<1	157	<0.02	8.0	168
425037114294202	<0.4	2.78	<0.2	<1	160	<0.02	8.3	125
424917114310601	<0.4	2.71	0.2	<1	196	<0.02	9.6	342
424835114545701	0.7	2.71	0.2	<1	168	<0.02	8.0	64
424712114505901	2.2	1.22	0.2	<1	542	<0.02	6.8	105
424732114482701	<0.4	2.65	<0.2	<1	164	<0.02	8.3	22
424440114223701	<0.4	2.18	<0.2	<1	206	<0.02	6.8	56
424441114224701	<0.4	2.23	<0.2	<1	208	<0.02	7.3	84
424742114354901	<0.4	2.64	<0.2	<1	200	<0.02	8.9	15
424540114335902	0.5	2.40	<0.2	<1	213	<0.02	8.5	17
424458114344001	<0.4	2.33	<0.2	<1	210	<0.02	7.3	22
423908114314201	<0.4	1.64	0.2	<1	379	<0.02	7.7	3
423959114255301	<0.4	1.63	0.2	<1	378	<0.02	6.4	69
424621114435101	<0.4	2.54	<0.2	<1	173	<0.02	8.5	68
424555114340601	<0.4	2.23	<0.2	<1	192	<0.02	8.1	12
424103114300201	<0.4	1.66	0.3	<1	359	<0.02	9.3	72
424236114472202	0.6	2.27	<0.2	<1	197	<0.02	8.2	5
424209114391701	<0.4	1.92	<0.2	<1	268	<0.02	7.2	2
424145114354201	2.0	1.61	0.3	<1	345	<0.02	7.3	673
424251114285501	<0.4	1.98	<0.2	<1	287	<0.02	7.1	60
424748114271801	0.9	1.70	0.3	<1	326	<0.02	16.4	207
424545114380401	0.5	2.48	<0.2	<1	208	<0.02	9.2	4
424129114230201	<0.4	2.25	0.2	<1	382	<0.02	6.7	147
424040114324801	<0.4	1.66	0.3	<1	334	<0.02	10.3	63
424748114443401	<0.4	2.08	<0.2	<1	225	<0.02	7.8	25
424403114483401	<0.4	2.40	<0.2	<1	190	<0.02	9.0	6
424051114410501	<0.4	1.90	<0.2	<1	292	<0.02	7.4	11

Appendix 1. Groundwater-quality data from 36 wells completed in the eastern Snake River Plain Aquifer, Jerome and Gooding Counties, south-central Idaho, 2017.—Continued

Site identification No.	Antimony, µg/L (water filtered)	Arsenic, µg/L (water filtered)	Boron, µg/L (water filtered)	Selenium, µg/L (water filtered)	Organic carbon, mg/L (water filtered)	Uranium, µg/L (water filtered)	Stable isotope, delta $^{2}H/^{1}H$, ‰	Stable isotope, delta $^{18}O/^{16}O$, ‰
424425114463401	0.09	2.47	48	0.65	<0.23	1.71	-135.6	-17.85
424618114471804	<0.03	21.24	41	<0.05	<0.23	<0.01	-139.5	-18.21
424236114425301	0.11	2.40	55	0.65	3.42	1.82	-135.7	-17.77
424033114481901	0.09	1.75	55	0.55	0.45	1.36	-135.2	-17.66
424447114501201	0.10	2.30	45	0.69	<0.23	1.79	-136.1	-17.74
424909114510001	0.15	2.28	40	0.76	<0.23	1.66	-134.9	-17.48
424320114215401	0.09	2.24	54	0.57	0.27	1.65	-135.3	-17.62
424327114380501	0.08	2.39	50	0.62	0.33	1.76	-135.4	-17.73
424329114271801	0.08	2.15	60	0.80	0.48	2.08	-133.7	-17.59
425104114283702	0.11	2.27	31	0.70	0.25	1.52	-137.0	-17.88
425037114294202	0.09	2.27	32	0.72	<0.23	1.56	-136.7	-17.90
424917114310601	0.11	2.62	60	0.81	0.35	2.88	-132.9	-17.24
424835114545701	0.08	2.65	35	0.70	<0.23	1.69	-136.1	-17.70
424712114505901	0.23	3.01	91	0.91	0.96	5.00	-121.9	-15.54
424732114482701	0.11	2.18	34	0.73	<0.23	1.75	-136.2	-17.76
424440114223701	0.08	2.15	50	0.49	0.44	1.93	-134.0	-17.43
424441114224701	0.09	2.40	48	0.50	0.28	1.94	-133.6	-17.44
424742114354901	0.09	2.33	37	0.71	0.37	1.51	-135.7	-17.67
424540114335902	0.08	2.26	43	0.61	0.27	1.52	-135.0	-17.80
424458114344001	0.08	1.92	44	0.62	0.29	2.04	-136.1	-17.93
423908114314201	0.09	2.72	80	0.91	1.97	2.73	-127.3	-16.57
423959114255301	0.08	2.17	79	1.00	0.86	2.96	-127.5	-16.63
424621114435101	0.08	2.28	36	0.69	0.26	1.83	-135.9	-17.82
424555114340601	0.09	2.48	46	0.62	0.29	1.85	-134.2	-17.68
424103114300201	0.09	2.97	83	0.94	0.92	3.55	-127.5	-16.63
424236114472202	0.10	2.45	43	0.68	0.40	1.89	-134.9	-17.72
424209114391701	0.08	2.30	53	0.80	0.50	2.48	-132.3	-17.51
424145114354201	0.09	2.50	88	0.97	0.90	3.20	-127.8	-16.72
424251114285501	0.08	2.17	68	0.89	0.79	2.31	-132.8	-17.34
424748114271801	0.10	2.11	114	0.66	2.17	5.07	-125.7	-16.08
424545114380401	0.08	2.31	41	0.61	0.45	1.50	-135.7	-17.81
424129114230201	0.09	2.28	85	1.12	1.49	2.64	-128.7	-16.85
424040114324801	0.11	3.59	73	0.83	1.01	3.75	-127.5	-16.43
424748114443401	0.10	2.13	40	0.62	0.90	2.34	-132.7	-17.28
424403114483401	0.09	2.57	43	0.68	0.52	1.88	-135.2	-17.87
424051114410501	0.08	2.44	54	0.84	0.61	2.77	-133.1	-17.40

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